

What Is Claimed Is:

1. A method of dispersing a powder material into a cigarette filler, comprising:

providing a cigarette having a filter at one end and a tobacco rod portion containing tobacco cut filler at the opposite end;

positioning said cigarette with said filter in communication with a vacuum source and said tobacco rod having one end opposite from the filter placed in proximity to said powder material; and

drawing a vacuum on the filter end of said cigarette with said vacuum source, thereby causing said powder material to be drawn into said tobacco rod by a negative pressure created within said tobacco rod.

2. The method according to claim 1, wherein said filter end of said cigarette is sealed in a vacuum tube connected to said vacuum source for application of a vacuum at the filter end of the cigarette.

3. The method according to claim 1, wherein a predetermined amount of said powder material is provided in a container, receptacle or dispenser, and the tobacco rod end of said cigarette is placed in fluid communication with said container, receptacle or dispenser during application of vacuum at the filter end of said cigarette.

4. The method according to claim 1, wherein the amount of vacuum applied to the filter end of the cigarette is less for powder material having particles of a smaller size than the amount of vacuum applied for powder material having particles of a larger size.

5. The method according to claim 1, wherein the vacuum is applied to the filter end of the cigarette for a longer period of time for powder material having particles of a smaller size than for powder material having particles of a larger size.

6. The method according to claim 1, wherein approximately 50 mg of a powder material comprising CuO and/or CeO₂ is placed in a container and the end of said tobacco rod opposite from said filter is placed in proximity to said powder material within said container.

7. The method according to claim 6, wherein said powder material comprises particles of a size in the range from 20 to 100 nm.

8. The method according to claim 7, wherein said vacuum is maintained to said filter end for a period of time that is a function of the size of the particles of powder material, with the period of time being greater for smaller sized particles than for larger sized particles.

9. The method according to claim 7, wherein the amount of said vacuum applied to said filter end is a function of the size of the particles of powder material, with the amount of vacuum being greater for larger sized particles than for smaller sized particles.

10. The method according to claim 1, wherein said powder material comprises catalyst particles.

11. The method according to claim 10, wherein said catalyst particles comprise metal particles that comprise transition, refractory and precious metals selected from the group consisting of B, Mg, Al, Si, Ti, Fe, Co, Ni, Cu, Zn, Ge,

Zr, Nb, Mo, Ru, Rh, Pd, Ag, Sn, Ce, Hf, Ta, W, Re, Os, Ir, Pt, Au and mixtures thereof.

12. The method according to claim 10, wherein said catalyst particles are supported on nanoscale support particles comprising nanoscale particles selected from the group consisting of aluminum oxide, silicon oxide, titanium oxide, iron oxide, cobalt oxide, copper oxide, zirconium oxide cerium oxide, yttrium oxide optionally doped with zirconium, manganese oxide optionally doped with palladium, and mixtures thereof.

13. The method according to claim 12, wherein 0.1 to 25 weight percent gold nanoscale particles are supported on iron oxide nanoscale support particles.

14. The method according to claim 12, wherein said catalyst particles and said nanoscale support particles have an average particle size less than approximately 100 nanometer.

15. The method according to claim 12, wherein said catalyst particles and said nanoscale support particles have an average particle size less than approximately 7 nanometer.

16. A system for dispersing catalyst particles throughout the tobacco rod portion of a machine-made cigarette having a filter at one end and a tobacco rod portion comprising tobacco cut filler, the tobacco rod portion being joined to the filter with tipping paper, the system comprising:

a vacuum tube connected to a source of vacuum and adapted to form a fitted connection with the filter end of the cigarette; and

a container, receptacle or dispenser for containing a predetermined quantity of the catalyst particles and positioning the particles in proximity to or in fluid communication with the cut filler end of the cigarette at the end of the tobacco rod portion of the cigarette opposite from the filter end of the cigarette.

17. The system according to claim 16, wherein said catalyst particles comprise metal particles that comprise transition, refractory and precious metals selected from the group consisting of B, Mg, Al, Si, Ti, Fe, Co, Ni, Cu, Zn, Ge, Zr, Nb, Mo, Ru, Rh, Pd, Ag, Sn, Ce, Hf, Ta, W, Re, Os, Ir, Pt, Au and mixtures thereof.

18. The system according to claim 16, wherein said catalyst particles are supported on nanoscale support particles comprising nanoscale particles selected from the group consisting of aluminum oxide, silicon oxide, titanium oxide, iron oxide, cobalt oxide, copper oxide, zirconium oxide cerium oxide, yttrium oxide optionally doped with zirconium, manganese oxide optionally doped with palladium, and mixtures thereof.

19. The system according to claim 18, wherein 0.1 to 25 weight percent gold nanoscale particles are supported on iron oxide nanoscale support particles.

20. The system according to claim 18, wherein said catalyst particles and said nanoscale support particles have an average particle size less than approximately 100 nanometer.

21. The system according to claim 18, wherein said catalyst particles and said nanoscale support particles have an average particle size less than approximately 7 nanometer.